MARYLAND'S COLLEGE AND CAREER READY STANDARDS FOR UNIFIED ENGLISH BRAILLE

Braille, Formatting, and Tactile Graphics Checklists By Grade

Student Name: _____

MARYLAND STATE DEPARTMENT OF
EDUCATION
PREPARING WORLD CLASS STUDENTS

MSDE

Division of Special Education /Early Intervention Services

Pre Kindergarten

Unified English Braille Code

	Print	Braille	
Capital sign	N/A	⠠	
Double capital sign	N/A	⠠⠠	
Capital sign for passage Opening Closing	N/A	 ⠠⠠⠠ ⠠⠠⠄	
Numeric indicator	N/A	⠼	
Period	.	⠲	
Question mark	?	⠦	
Transcriber's note sign Opening Closing	N/A	⠈⠦ ⠈⠴	
Exclamation point	!	⠖	
Italic sign (single letter)	N/A	⠨⠆	
Italic sign (word)	N/A	⠨⠂	
Italic sign (passage) Opening Closing	N/A	⠨⠶ ⠨⠄	
Alphabet	a b c d e f g h i j k l m n o p q r s t u v w x y z	⠁ ⠃ ⠉ ⠙ ⠑ ⠋ ⠛ ⠓ ⠊ ⠚ ⠅ ⠇ ⠍ ⠝ ⠕ ⠏ ⠟ ⠗ ⠎ ⠞ ⠥ ⠧ ⠺ ⠭ ⠽ ⠵	
Literary numbers 0-10	0 1 2 3 4 5 6 7 8 9 10	⠼⠚ ⠼⠁ ⠼⠃ ⠼⠉ ⠼⠙ ⠼⠑ ⠼⠋ ⠼⠛ ⠼⠓ ⠼⠊ ⠼⠁⠚	
First Name	N/A		

Formatting

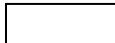|	Print	Braille	
Print page numbers	N/A	Top, right corner 1, a1, b1	
Braille page numbers	N/A	Bottom, right corner	
New print page indicator	N/A	⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠼⠁	

Title page	N/A	Braille titles are sometimes centered on the page, but they can also be located along the spine.	

Pre Kindergarten

Nemeth Braille Code

	Mathematical Sign	Nemeth Symbol	
Numeric indicator	N/A	⠼	
Read numbers 0-10	0 1 2 3 4 5 6 7 8 9 10	⠴ ⠂ ⠆ ⠒ ⠲ ⠢ ⠖ ⠶ ⠦ ⠔ ⠂⠴	
Punctuation indicator	1.	⠂⠲	

Transcriber's note symbols
   Opening
   Closing
	N/A	⠈⠄
		⠠⠄	

Tactile Graphics

	Mathematical Sign	Braille	
Number line	← →	Tactile graphic	
Square	□	Tactile graphic	
Circle	○	Tactile graphic	
Triangle	△	Tactile graphic	
Rectangle	▭	N/A	
Objects	Example: picture of a car	Tactile graphic Represented with simple, solid shapes (Example: rectangle)	

Kindergarten

Unified English Braille Code

	Print	Braille	
Long dash	----	⠠⠤⠤⠤	
Ellipsis	…	⠄⠄⠄	
Grade 1 mode Symbol/letter Word Passage Terminator	N/A	⠰ ⠰⠰ ⠰⠰⠰ ⠰⠄	
Plus (in a non-mathematical context)	+	⠐⠖	
Minus (in a non-mathematical context)	-	⠐⠤	
Equals (in a non-mathematical context)	=	⠐⠶	
Transcriber's note Opening Closing	N/A	⠈⠨⠣ ⠈⠨⠜	
Alphabet words (BOP)	but can do every from go have just knowledge like more not people quite rather so that us very will it you as	�... (braille cells for the words)	
Contractions (BOP)	and of for the with	⠯ ⠷ ⠿ ⠮ ⠾	
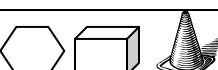
Formatting/Tactile Graphic

	Print	Braille	
Title page: illustrator	N/A	According to *Braille Formats*, the illustrator is omitted from the title page so the name may not always be present.	
Graphic organizers	N/A	See *Braille Formats*	
Maps	N/A	See Appendix C: Resources	

Kindergarten

Nemeth Braille Code

	Mathematical Sign	Nemeth Symbol	
Hyphen	-	⠠⠤	
Read and write numbers 0-20	0-20	⠚ � ⠃ ⠙ ⠑	
Mathematical comma	,	⠠	
Ellipse	2, 3, 4, …	⠒�⠒ ⠒⠶⠒ ⠒⠶⠒ �	
Plus	+	⠲	
Minus	-	⠤	
Equal to	=	⠀⠒⠒	
Write equations in horizontal format	1+2 = 3	⠰⠂⠲⠆ ⠀⠒⠒⠀ ⠰⠒	

Tactile Graphics

	Mathematical Sign	Braille	
Hundreds chart	N/A	Adapted Manipulative or Tactile Graphic with Nemeth Braille Code Numbers	
Hexagon, cube, cone, cylinder, sphere		Tactile graphic	

Grade 1

Unified English Braille Code

	Print	Braille	
Hyphen	-	⠤	
Comma	,	⠂	
Ampersand	&	⠈⠯	

Quotation marks
  Opening non-specific
  Closing non-specific
  Opening specific
  Closing specific
  Other specific quotation marks
	"
	"
	'
	'
		⠦
		⠴
		⠠⠦
		⠠⠴
		Refer to *The Rules of UEB, Second Edition (section 7.6)*	

Colon	:	⠒	
Apostrophe	'	⠄	
Modifiers	Acute - Fiancée Umlaut - spätzel Grave – très chic Cedilla - François Tilde - Señorita	⠈⠁ ⠈⠒ ⠈⠐ ⠈⠯ ⠈⠻	
Prefixes **(CC)**	con dis	⠒ ⠲	
Suffixes **(CC)**	ful ity less ment ness tion	⠰⠙ ⠰⠽ ⠰⠞ ⠰⠎ ⠰⠝	
Common consonant digraphs **(CC)**	gh	⠣	
Common consonant digraphs **(CC and BOP)**	ch sh th wh	⠡ ⠩ ⠹ ⠱	
Prepositions **(CC)**	above below behind beneath beside between beyond	⠁⠃⠧ ⠃⠇ ⠃⠓ ⠃⠝ ⠃⠎ ⠃⠞ ⠃⠽	

Grade 1

Contractions **(BOP)**		
	about across	⠁⠃ ⠁⠉⠗
	after afternoon	⠁⠋ ⠁⠋⠝
	again against	⠁⠛ ⠁⠛⠌
	almost already	⠁⠇⠍ ⠁⠇⠗
	also always ar be	⠁⠇ ⠁⠇⠺ ⠜ ⠆
	because before	⠃⠉ ⠃⠋
	blind braille by	⠃⠇ ⠃⠗⠇ ⠨
	cannot character	⠉⠝ ⠐⠡
	child children	⠡ ⠡⠝
	could day ea ed	⠉⠙ ⠙ ⠂ ⠫
	either en enough	⠑⠊ ⠢ ⠢
	er ever father	⠻ ⠑⠧ ⠋⠗
	first friend	⠋⠌ ⠋⠗
	good great had	⠛⠙ ⠛⠗⠞ ⠓⠙
	here him himself	⠓⠗ ⠓⠍ ⠓⠍⠋
	his in ing its	⠦ ⠔ ⠬ ⠭⠎
	know letter little	⠅⠝ ⠇⠗ ⠇⠇
	lord many	⠇⠙ ⠍⠽
	mother much	⠍⠕ ⠍⠡
	must myself	⠍⠌ ⠍⠽⠋
	name neither	⠝ ⠝⠑⠊
	one ou ought	⠐⠕ ⠳ ⠣⠞
	out ow paid part	⠳ ⠪ ⠏⠙ ⠐⠏
	question quick	⠟ ⠟⠅
	right said shall	⠗⠞ ⠎⠙ ⠩
	should some	⠩⠙ ⠰⠎
	spirit st still such	⠰⠎ ⠌ ⠌ ⠎⠡
	their there these	⠮⠗ ⠮⠗ ⠮⠎
	this those	⠹ ⠮⠎
	through time	⠹⠗ ⠞⠍
	today together	⠞⠙ ⠞⠛⠗

Grade 1
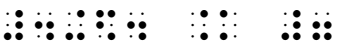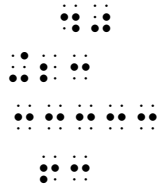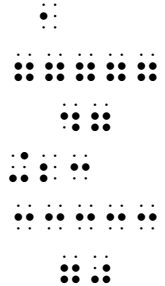
	tomorrow	⠞⠍	
	tonight under	⠞⠝ ⠥⠗	
	upon was were	⠥⠏ ⠐⠺ ⠶	
	where which	⠱⠻ ⠱	
	whose word	⠱⠎ ⠺�	
	work world	⠺⠅ ⠺⠇	
	would young	⠺⠙ ⠽⠛	
	your yourself	⠽⠗ ⠽⠗⠋	

Formatting/Tactile Graphics
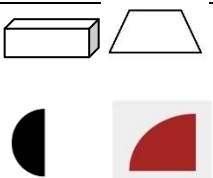
	Print	Braille	
Headings	N/A	See *Braille Formats*	
Table of contents: guide dots	N/A	⠂ ⠂ ⠂ ⠂ ⠂ ⠂ ⠂ ⠂	

Boldface indicator
  Letter
  Word
  Passage
  Terminator
	N/A	⠘⠆
		⠘⠂
		⠘⠶
		⠘⠄	

Underline indicator
  Letter
  Word
  Passage
  Terminator
	N/A	⠸⠆
		⠸⠂
		⠸⠶
		⠸⠄	

Script indicator
  Letter
  Word
  Passage
  Terminator
	N/A	⠈⠆
		⠈⠂
		⠈⠶
		⠈⠄	

Color indicator	N/A	Refer to *The Rules of UEB, Second Edition (section 9.5)*	

Grade 1

Nemeth Braille Code

	Mathematical Sign	Braille	
Numbers 21-120	32 33 99 100	⠼⠉⠃ ⠼⠉⠉ ⠼⠊⠊ ⠼⠂⠴⠴	
Tally marks	卌	⠸⠿⠸⠿	
Shape indicator	N/A	⠫	
Horizontal equations with question mark or blank space for omission	$4 + ? = 7$ $4 +\ \ = 7$	⠼⠙⠬⠿ ⠨⠅ ⠼⠛	
Horizontal equations with blank line for omission	$4 + \underline{\ \ } = 7$	⠼⠙⠬ ⠤⠤⠤⠤ ⠨⠅ ⠼⠛	
Horizontal equations with box/square for omission	$4 + \square = 7$	⠼⠙⠬⠫⠲ ⠨⠅ ⠼⠛	
Spatial arrangements of addition and subtraction Separation line extending one space on each side of arrangement	40 +23 ―――― 63	⠼⠙⠴ ⠬⠼⠃⠒ ⠒⠒⠒⠒⠒ ⠼⠖⠒	
Carried number indicator	[1] 47 +23 ―――― 70	⠠⠂ ⠼⠙⠛ ⠬⠼⠃⠒ ⠒⠒⠒⠒⠒⠒ ⠼⠛⠴	
Less than	$2 < 4$	⠼⠃ ⠐⠅ ⠼⠙	
Greater than	$5 > 1$	⠼⠑ ⠨⠂ ⠼⠂	

Tactile Graphics

	Mathematical Sign	Braille	
Rectangular prisms, trapezoid, half-circle, quarter circle	(rectangular prism, trapezoid, half-circle, quarter circle shapes)	Tactile graphics	

Grade 2

Unified English Braille Code
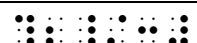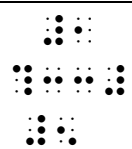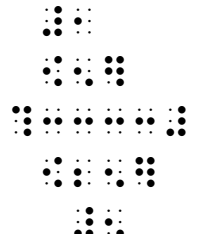
	Print	Braille	
Dash Long dash	-- ----	⠒⠒ ⠐⠒⠒	
Semicolon	;	⠆	

Parentheses
   Opening
   Closing
	(
	)
		⠐⠣
		⠐⠜	

Capital Modes Terminator	N/A	⠠⠄	
Reference indicator	N/A	⠐⠂	
Simple numeric fraction line (in a non-mathematical context)	½ (vertical or nearly vertical	⠌	
General fraction line (in a non-mathematical context)	4/5 (linear form)	⠲⠲	

General fraction indicator
   Opening
   Closing
	N/A
	
	�
	�
		⠣
		
		⠜	

Contractions **(BOP)**	according	⠁⠉	
	ance afterward	⠁⠝⠉⠑ ⠁⠋⠺⠙	
	although	⠁⠇⠹	
	altogether bb	⠁⠇⠞ ⠆	
	conceive	⠉⠧	
	conceiving	⠉⠧⠛	
	deceive deceiving	⠙⠉⠧ ⠙⠉⠧⠛	
	declare declaring	⠙⠑⠉⠇ ⠙⠑⠉⠇⠛	
	ence ff gg herself	⠑⠝⠉⠑ ⠿ ⠛⠛ ⠓⠻⠋	
	itself immediate	⠭⠋ ⠊⠍⠍	
	necessary	⠝⠑⠉	
	ong oneself	⠰⠲ ⠐⠕⠰⠋	
	ourselves ound	⠳⠗⠧⠎ ⠳⠙	
	ount paid	⠳⠞ ⠏⠙	

	perceive	⠏⠻⠉⠑⠊⠧⠑	
	perceiving	⠏⠻⠉⠧⠛	
	perhaps	⠏⠻⠓	
	receive receiving	⠗⠑⠉ ⠗⠑⠉⠧⠛	
	rejoice rejoicing	⠗⠑⠚ ⠗⠑⠚⠉⠛	
	sion thyself	⠩⠝ ⠹⠽⠋	
	themselves	⠮⠍⠧⠎	
	work yourselves	⠺⠅ ⠽⠗⠧⠎	
Website address/hyperlink	www.google.com	⠺⠺⠺⠲⠛⠕⠕⠛⠇⠑⠲⠉⠕⠍ Refer to *The Rules of UEB, Second Edition (section 11.10)*	
Underscore	_	⠨⠤	
Hash	#	⠼⠹	
Commercial at	@	⠈⠁	
Slash	/	⠸⠌	
Backslash		⠸⠡	
Trademark	™	⠘⠞	
Copyright	©	⠘⠉	
Dollar	$	⠈⠎	

Diacritical marks		
Stress Primary Secondary	N/A	⠈⠈⠱ ⠈⠐⠱
Breve	ă	⠸⠈⠁
Cedilla	ç	⠠⠹⠉
Circumflex	â	⠘⠈⠁
Crossbar	ǥ	⠈⠳⠛
Ligatures, tied	s͜h	�札⠈⠢⠎⠓

	Print	Braille	
letters			
Macron	ū	⠐⠥	
Tilde	~ n	⠈�	
Umlaut, diaeresis	ä	�	
Acute accent	á	⠈⠁	
Grave accent	à	⠰⠁	
Schwa	ə	�	

Grade 2

Formatting

	Print	Braille	
Bullet	•	⠸⠲	
Paragraph indentation	N/A	Two spaces	

Box lines
    Top
    Bottom
	N/A	⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶⠶
		⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒⠒	

Reading captions	N/A	Written as Transcriber's Notes	
Reading subheadings	N/A	*See Braille Formats*	
Reading columned material	N/A	*See Braille Formats*	
Dictionary skills: locating guide words	N/A	N/A	
Using a glossary and index	N/A	N/A	
Foreign language	N/A	Refer to *The Rules of UEB, Second Edition (section 13)*	

Grade 2

Nemeth Braille Code

	Mathematical Sign	Nemeth Symbol	
Numbers to 1000	500 875 1000	⠼⠢⠴⠴ ⠼⠦⠶⠢ ⠼⠂⠴⠴⠴	
Colon	:	⠒	
Decimal point	.	⠨	
Time	3:00	⠼⠒⠸⠒⠴⠴	
Money	Pictures of currency and coins	Penny – pn, nickel – nk, dime – dm, quarter – qr	
Cent sign	5¢	⠼⠢⠐⠯	
Dollar sign	$1.00	⠈⠎⠼⠂⠨⠴⠴	
Reading a key to a graph	N/A	Contains Nemeth Braille Code and sometimes tactile graphics	
Horizontal fraction bar	_____	⠒	
Simple fraction with horizontal bar	2 ___ 3	⠹⠃⠌⠉⠼	
Diagonal fraction bar	/	⠸⠌	
Simple fraction with a diagonal bar	2/3	⠹⠃⠸⠌⠉⠼	
Read spatial arrangements of fractions	1 ─ 5	⠼⠂ ⠳⠶⠶ ⠼⠢	
Termination indicator	N/A	⠻	
Cancellation indicator (used in examples of spatial arrangements, not for computation)	1 5̶ 2̶5̶ 5	⠼⠂ ⠠⠌⠢⠻ ⠱⠶⠶⠶⠶⠱ ⠠⠌⠢⠻ ⠼⠢	

Grade 2

Tactile Graphics

	Mathematical Sign	Nemeth Symbol	
Ruler (nearest inch, centimeter, foot, yard, meter)	N/A	Tactile graphics	
Clocks (nearest 5 minutes)	N/A	Tactile graphic	
Dot (Line) plot (read and create)	Number line with Xs plotted horizontally above numbers for data points	Number line is a tactile graphic with a full cell to represent each X for plotted points ⠿	
Picture graph (read and create)	N/A	Lines created as a tactile graphic with Nemeth Braille Code labels. A full cell represents each picture ⠿	
Bar graph (read and create)	N/A	Tactile graphic with Nemeth Braille Code labels	
Quadrilaterals, pentagons	▱ ⬠	Tactile graphic	

Grade 3

Unified English Braille Code
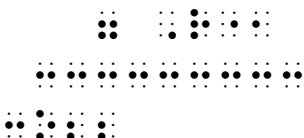
	Print	Braille	

Brackets
   Opening
   Closing
	[
	
	]
		⠨⠷
		
		⠨⠾	

Brace (Curly Bracket)
   Opening
   Closing
	{
	
	}
		⠨⠦
		
		⠨⠴	

Ditto	"	⠐⠶	
Multiplication (in a non-mathematical context)	×	⠐⠦	
Division (in a non-mathematical context)	÷	⠐⠌	

Formatting

	Print	Braille	

Nemeth Code Indicators
   Begin
   End
	N/A	⠸⠩
		⠸⠱	

Poetry
  Stanzas
  Numbered lines
  Formats (shape)
	N/A	See *Braille Formats*	

Nemeth Braille Code

	Mathematical Sign	Nemeth Symbol	
Multiplication cross	x	⠈⠡	
Multiplication dot	•	⠐⠠⠄	
Division	÷	⠨⠌	
Division cage (spatial format)	7 ‾‾‾‾ 3) 21	⠶ ⠒⠶⠶⠶⠶ �⠲⠂⠂	
Division cage (linear format)	‾‾‾‾ 3) 21	⠒⠔⠢⠔⠂⠒	

Multipurpose indicator	N/A	⠐	
Remainder	7 R1 ⎯⎯⎯ 3⟌ 22		
Parentheses	(5, 10)		
English letter indicator	N/A	⠰	
Picture graph with 2:1 scale (read and create)	N/A	Lines created as a tactile graphic with Nemeth Braille Code labels. A full cell represents each whole picture ⠿ Dots 4, 5, 6 represent each half picture ⠸	

Tactile Graphics

	Mathematical Sign	**Nemeth Symbol**	
Rhombus	▱	Tactile graphic	
Right angle	⦜	N/A	
Area and perimeter	N/A	Tactile graphics	

Grade 4

Unified English Braille Code

	Print	Braille	
Degree	°	⠨⠡	
Asterisk	*	⠐⠔	
Paragraph	¶	⠨⠏	

Formatting

NONE

Nemeth Braille Code

	Mathematical Sign	Nemeth Symbol	
Number line	A 0 1 2 3 4 5	Beginning in grade 4, all number lines are done using Nemeth Braille Code symbols Axis Line ⠒⠒ Left arrow ⠪ Right arrow ⠕ Scale/tick mark ⠿ Solid point ⠿ 	
Dot (Line) plot (read and create)	Number line with Xs plotted vertically above numbers for data points	Dot (Line) Plot Number lines are created using Nemeth Braille Code symbols Axis Line ⠒⠒ Left arrow ⠪ Right arrow ⠕ Scale/tick mark ⠿ X ⠿	

Tables		Top of box ⠿ Separation line after heading ⠒ Bottom of box ⠿ Guide dots ⠄ ⠄ ⠄	
Degree	5°	⠼⠢⠘⠨⠡	
Mixed numeral with diagonal fraction bar	4 3/4	⠼⠙⠹⠒⠌⠲⠼	
Circle	⭘	⠫⠉	
Triangle	△	⠫⠞	
Diamond	◇	⠫⠫	
Square	□	⠫⠲	
Star	☆	⠫⠎	
Rectangle	▭	⠫�	
Angle	∠	⠫⠪	
Angle ABC	∠ABC	⠫⠪ ⠠⠁⠠⠃⠠⠉	
Directly over indicator	N/A	⠣	
Line AB	⟷ AB	⠐⠇⠒⠒⠒⠢⠁⠃	
Line segment AB	⎯ AB	⠐⠇⠒⠒⠁⠃	
Ray AB	⟶ AB	⠐⠗⠒⠒⠢⠁⠃	
Parallel	||	⠫⠇	
Perpendicular	⊥	⠫⠼	

Tactile Graphics

	Mathematical Sign	Nemeth Symbol	
Point	•	Tactile graphic	

Angle	$\angle$	Tactile graphic	
Line	⟷	Tactile graphic	
Ray	→	Tactile graphic	
Line segment	___	Tactile graphic	

Grade 5
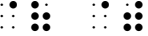
Unified English Braille Code

NONE

Formatting

NONE

Nemeth Braille Code

	Mathematical Sign	Nemeth symbol	
Set braces	{ }	⠨⠷　⠨⠾	
Brackets	[ ]	⠈⠷　⠈⠾	
Ordered pair	*(a, b)*	⠷⠁⠂⠀�⠾	
Exponent (superscript)	3^2	�⠘�2	
Baseline indicator	2^2+3^2	�⠘�2⠐⠬�⠘�2	

Tactile Graphics

	Mathematical Sign	Nemeth symbol	
Coordinate grid (axis, origin)	N/A	Tactile graphics	

Grade 6

Unified English Braille Code

Percent	%	⠨⠴	
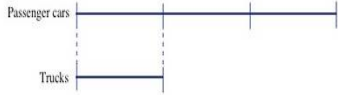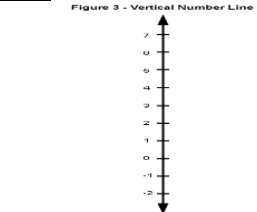
Formatting

NONE

Nemeth Braille Code

	Mathematical Sign	**Nemeth symbol**	
Not equal to	≠	⠐⠔⠐⠅	
Ratio	2 : 4	⠼⠃ ⠐⠂ ⠼⠙	
Percent	%	⠨⠴	
Absolute value of x	|**x**|	⠳⠭⠳	
Is less than or equal to	≤	⠐⠅⠱	
Is greater than or equal to	≥	⠨⠂⠅	
Negative number	−(−3) = 3	⠤⠣⠤⠒⠜ ⠀⠀⠨⠅⠀⠀⠒	
Use of variable in expressions	A=6s^2	⠠⠁ ⠨⠅ ⠖⠎⠰⠔⠼⠃	

Tactile Graphics

	Mathematical Sign	Nemeth symbol	
Tape diagram	Passenger cars / Trucks	Tactile graphic	
Double number line diagrams	0 20 / 0 100	Nemeth Braille Code Number line	
Vertical number line	Figure 3 - Vertical Number Line	Nemeth Braille Code number line	

MARYLAND'S COLLEGE AND CAREER READY STANDARDS FOR UNIFIED ENGLISH BRAILLE

Grade 6

Box plot or Box and whisker plot		Nemeth Braille Code Number Line with tactile graphics for box and whiskers	
Number line with inequality		Axis line ⠒⠒ Bold axis line ⠿ Open point ⠬ Solid point ⠸ Bold right arrow Bold right arrow	
Histogram		Nemeth Braille Code number line and tactile graphic for bars of data	

Grade 7

<u>**Unified English Braille Code**</u>

NONE

<u>**Formatting**</u>

NONE

<u>**Nemeth Braille Code**</u>

	Mathematical Sign	Nemeth symbol	
Measure of ∠*ABC*	$m\angle ABC$	�⠀⠀⠀⠀	
Complex fraction indicators opening/closing with horizontal line opening/closing with diagonal line	$\dfrac{\frac{3}{8}}{5}$ $\dfrac{2/3}{3/2}$		
Repetend (horizontal modifying bar)	$\overline{}$ 3.333		
Rectangle	N/A		
Triangle	N/A		
Is approximately equal to	≈		
Is congruent to	≅		
Is similar to	~		
Triangle with vertices *A, B*, and *C*	ΔABC		
Circle	N/A		
Greek letter indicator	N/A		
Pi	π		
Slope (using capital delta)	$\dfrac{\Delta y}{\Delta x}$		

<u>**Tactile Graphics**</u>

	Mathematical Sign	Nemeth symbol	
Tree diagram	N/A	Tactile graphic	

Grade 8

Unified English Braille Code

NONE

Formatting

NONE

Nemeth Braille Code

	Mathematical Sign	Nemeth symbol	
Principle square root of x	$\sqrt{x}$	⠜⠭⠻	
Index of radical	$(\sqrt[3]{8})^3 = 8$	⠈⠼⠒⠜⠦⠈⠼⠒⠻⠈⠼⠒ ⠀⠨⠅⠀⠦	
Negative exponent	3^{-3}	⠼⠒⠐⠤⠒	
Exponent in denominator	$\dfrac{1}{3^3}$	⠹⠂⠌⠒⠘⠒⠐⠼⠹	
A prime	A'	⠠⠁⠄	
A double prime	A''	⠠⠁⠄⠄	
Transformational notation	∠A → ∠A′ → ∠A″	⠫⠪⠀⠠⠁⠀⠫⠕⠀⠠⠁⠄⠀⠫⠕⠀⠠⠁⠄⠄	

Tactile Graphics

	Mathematical Sign	Nemeth symbol	
Scatter plot	N/A	Tactile graphic	
Line graph	N/A	Tactile graphic	

Grade 11

Unified English Braille Code
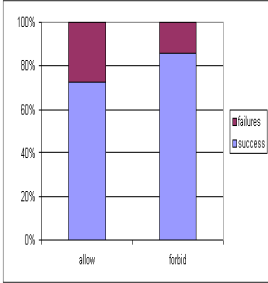
Section	§	⠠⠤	
Dagger	†	⠈⠠⠻	
Double dagger	‡	⠈⠠⠻	

Algebra 1/Data Analysis

Nemeth Braille Code
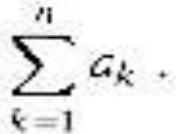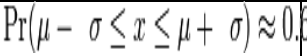
	Mathematical Sign	Nemeth symbol	
Value of the function *f* at *x*	$f(\mathrm{x})$	⠋⠀⠷⠭⠾	
Exponent to the exponent	$\left(5^{\frac{1}{3}}\right)^{3} = 5^{\left(\frac{1}{3}\right)(3)}$	(braille)	
Residual (italicized e) = observed value (y) – predicted value (caret above y)	$e = y - \hat{y}$	(braille)	
Sigma	$\Sigma = 0$	(braille)	
Average rate of change	$average\ rate\ of\ change = \dfrac{\Delta y}{\Delta x} = \dfrac{f(x+h) - f(x)}{h}$	(braille)	
Imaginary number	*i*	(braille)	
p implies q	$p \Rightarrow q$	(braille)	
Proportional to	$X \propto y$	(braille)	
Infinity	∞	(braille)	

Tactile Graphics

	Mathematical Sign	Nemeth symbol	
Segmented bar graph		Tactile graphic	

Algebra 2

Nemeth Braille Code

	Mathematical Sign	Nemeth symbol	
Arc with endpoints *A* and *B*		⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀	
Sine of *A*	sin A	⠀⠀⠀⠀ ⠀⠀	
Cosine A	cos A	⠀⠀⠀⠀ ⠀⠀	
Tangent of A	tan A	⠀⠀⠀⠀ ⠀⠀	
Logarithm	(xy) = log	⠀⠀⠀⠀⠀⠀ ⠀⠀ ⠀⠀⠀⠀	
Directly under indicator	N/A	⠒	
Subscript	4ₓ	⠀⠀⠀⠀⠀	
The summation *a1+a2+ ... +an.*	$$\sum_{k=1}^{n} a_k$$	⠀⠀⠀⠀⠀⠀⠀ ⠀⠀ ⠀⠀⠀⠀⠀⠀⠀⠀⠀	
n factorial	*n!*	⠀⠀	
Theta	θ	⠀⠀	
Empirical rule: μ is the mean of the distribution (Greek letter lower case mu) σ is its standard deviation (Greek letter lower case sigma)	$\Pr(\mu - \sigma \leq x \leq \mu + \sigma) \approx 0.6$	⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀ ⠀⠀⠀ ⠀⠀ ⠀⠀⠀ ⠀⠀⠀⠀⠀⠀⠀ ⠀⠀⠀⠀ ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀	
Formula for density (Greek letter lower case rho)	**ρ = m/v**	⠀⠀ ⠀⠀ ⠀⠀⠀⠀⠀	

Tactile Graphics

	Mathematical Sign	Nemeth symbol	
NONE			

Geometry

Nemeth Braille Code

	Mathematical Sign	Nemeth symbol	
Base *a,* of b (subscript)	$S_n = \dfrac{a\left(1 - r^n\right)}{\left(1 - r\right)}$	⠠⠎⠰⠝ ⠨⠅ ⠋⠷⠁⠷⠂⠤⠗⠡⠝⠾⠳⠷⠂⠤⠗⠾	
Sine of *A*	sin A	⠎⠊⠝ ⠠⠁	
Cosine A	cos A	⠉⠕⠎ ⠠⠁	
Therefore	∴	⠠⠡	
Union	A ∪ B	⠠⠁ ⠨⠬ ⠠⠃	
Intersection	A ∩ B	⠠⠁ ⠨⠩ ⠠⠃	
Complement	Aᶜ	⠠⠁⠘⠉	
Corresponds to	A ⟷ B	⠠⠁ ⠫⠒⠒⠕ ⠠⠃	
Conditional probability	P (A/B) = 0.3	⠠⠏⠷⠠⠁⠌⠠⠃⠾ ⠨⠅ ⠼⠒⠨⠒	

Tactile Graphics

	Mathematical Sign	Nemeth symbol	
NONE			